CLAIMS

1. An electroacoustic transducer for vibrating part of the body of a musical instrument,

wherein said musical instrument body has at least one solid surface on which to mount said transducer, said transducer comprising:

(a) a core made of magnetic steel or other magnetic material;

(b) a coil of electrically conductive wire wound around said core;

(c) two or more permanent magnets;

(d) one or more sheets of resilient material;

wherein said core protrudes from both ends of said coil such that substantially equal lengths, widths, heights, and shapes of said core protrude from both ends of said coil forming a symmetrical arrangement of core with respect to coil,

wherein said protruding core has at least two similar faces, one or more said faces being on one side of said coil and an equal number of corresponding said faces being on the other side of said coil, comprising a symmetrical arrangement of core faces about said coil,

wherein a said resilient sheet or sheets are sandwiched between each said respective core face and a said respective permanent magnet pole,

wherein each pair of said magnets adjacent to corresponding core faces are of substantially equal size and shape so as to form a symmetrical arrangement of magnets, sheets, and core faces about said core,

wherein connection of said coil or said electrical cable to an audio frequency signal source produces said transducer drive signal, resulting in an alternating current in said coil, wherein said alternating current induces an alternating magnetic flux in said core,

wherein said magnets and core vibrate with respect to each other in response to magnetic forces that result from said magnetic flux,

wherein the opposite permanent magnet poles from those mounted to said resilient sheet or sheets are rigidly attached onto a surface of said body of said musical instrument which is to be vibrated, or instead, said core is rigidly attached onto a surface of said body of said musical instrument,

wherein said musical instrument body is vibrated in response to said audio frequency current being produced in said coil.

2. The transducer of claim 1, wherein the said opposite permanent magnet poles from those mounted to said resilient sheets are mounted onto one surface of a plate, and wherein an opposing surface of said plate is rigidly mounted to said body of said musical instrument which is to be vibrated by said transducer.

3. The transducer of claim 1, wherein a body of mass is substituted for a musical instrument body.

4. The transducer of claim 2, wherein a body of mass is substituted for a musical instrument body.

5. The transducer of claim 2, wherein said plate is one side of a clamp means having two opposing sides, at least one of said two opposing sides being movable so as to firmly clamp a part of a body of said musical instrument or other body of mass between said two opposing sides of said clamp means.

6. A conductor routing means for combining first and second electrical signals through a single multi-conductor electrical cable,

wherein said first signal is the output signal of a musical instrument, and said second signal is a transducer drive signal, wherein the function of said transducer is to vibrate a body of said musical instrument, said transducer being mounted to the body of said instrument;

wherein said musical instrument output signal is applied to the input of an amplifier for an electroacoustic musical instrument sustainer, wherein said amplifier for said sustainer can be physically separate from said musical instrument, wherein the output of said sustainer amplifier is said transducer drive signal;

wherein a first signal conductor which carries said first signal joins to a first conductor of said multi-conductor electrical cable and wherein said second signal cable carrying said second signal joins to a second conductor of said multi-conductor electrical cable;

wherein said junctions of said first and second signal conductors to respective said first and second conductors of said multi-conductor cable are attached to said instrument.

7. The conductor routing means of claim 6, wherein said junctions of said first and second signal conductors to respective said first and second conductors of said multi-conductor cable are attached to a structure that is attached to said instrument.

8. The conductor routing means of claim 6, wherein said second signal conductor is attached to a musical instrument strap, wherein said strap is used to carry said instrument.

9. The conductor routing means of claim 8, wherein said strap has built-in cord attachment means.

10. A controller/amplifier circuit for a musical instrument sustainer, said musical instrument having at least one vibratile element which produces the sound of said instrument, said instrument also having a pickup for sensing the vibrations of said vibratile elements, wherein said pickup produces a pickup electrical signal in response to vibrations of said vibratile element or elements, wherein said pickup electrical signal is the input signal to said controller/amplifier, said controller/amplifier comprising:

(a) at least one amplifier circuit to amplify said pickup signal;

(b) at least one signal processing circuit to process said pickup signal, wherein one said signal processing circuit is an automatic phase reversal circuit;

(c) an output which drives a transducer for said musical instrument sustainer;

wherein phase reversal of said signal causes a change in vibration harmonics of said vibratile elements of said instrument,

whereby automatic phase reversal of said signal occurs when said pickup signal amplitude changes from a first amplitude to another, lesser amplitude, such that said change between said first amplitude and said lesser amplitude must exceed a predetermined rate of change,

wherein if said rate of change between said first amplitude and said second amplitude is less than said predetermined difference, said automatic phase reversal will not occur, but wherein if said rate of change between said first amplitude and said second amplitude is equal to or greater than said predetermined difference, then said automatic phase reversal will occur.